Review: non-pharmacological interventions induce or maintain weight loss in adults with prediabetes


In adults with prediabetes (impaired glucose tolerance or impaired fasting glucose), do dietary, physical activity, and behavioural interventions induce or maintain weight loss?

METHODS

Data sources: Medline, CINAHL, EMBASE/Excerpta Medica, ERIC, PsycINFO, Web of Science, BIOSIS, and Nutrition Abstracts and Review (all up to May 2004); Cochrane Library (2004, issue 2) and Cochrane Central Register of Controlled trials (2004, issue 2); 5 relevant journals; bibliographies of relevant articles; and experts in the field.

Study selection and assessment: randomised controlled trials (RCTs) (published in any language) that included adults with prediabetes and compared dietary, physical activity, or behavioural strategies with a control condition of no intervention, usual care, the same intervention at a different intensity, or any other weight loss or weight control intervention; had follow up >12 months; and measured relevant outcomes.

Outcomes: weight, body mass index (BMI), and percentage weight loss from baseline.

MAIN RESULTS

9 RCTs (n = 5168) met the selection criteria (mean age 51 y, 50% men). Dietary interventions included restrictions on calories (7 RCTs) or fat intake (2 RCTs) and often included weight loss goals (2 RCTs). Physical activity interventions included counselling to increase activity (2 RCTs), supervised sessions several times a week (4 RCTs), or daily aerobic sessions in a residence programme (1 RCT). Behavioural interventions included intensive behavioural techniques (1 RCT), goal setting (2 RCTs), self feedback with food or exercise diaries (3 RCTs), and stress management or improved coping skills (1 RCT). Meta-analyses were done using a random effects model. Reductions in weight and BMI and percentage weight loss from baseline were greater in the intervention group than in the control group at various points of follow up (table).

CONCLUSION

Dietary, physical activity, and behavioural interventions are effective for inducing or maintaining weight loss in adults with prediabetes.

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<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Follow up (years)</th>
<th>Number of trials (n)</th>
<th>Weighted mean difference (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight loss (kg)</td>
<td>1</td>
<td>4 (1016)</td>
<td>-2.8 [-4.7 to -1.0]</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>3 (700)</td>
<td>-2.6 [-3.3 to -1.9]</td>
</tr>
<tr>
<td></td>
<td>&gt;2 years</td>
<td>4 (2229)</td>
<td>-4.9 [-6.7 to -3.1]</td>
</tr>
<tr>
<td></td>
<td>Most distal follow up</td>
<td>2 (2799)</td>
<td>-3.2 [-4.8 to -1.7]</td>
</tr>
<tr>
<td>Body mass index (kg/m²)</td>
<td>1</td>
<td>3 (802)</td>
<td>-1.3 [-1.9 to -0.8]</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>3 (203)</td>
<td>-0.8 [-1.2 to -0.5]</td>
</tr>
<tr>
<td>Weight loss (%)</td>
<td>1</td>
<td>4 (1016)</td>
<td>-3.3 [-3.5 to -1.3]</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>3 (700)</td>
<td>-3.1 [-3.9 to -2.3]</td>
</tr>
</tbody>
</table>

*Meta-analyses were done using a random effects model; all significant differences favour intervention groups. CI defined in glossary.

Commentary

The review by Norris et al provides evidence that non-pharmacological interventions for adults with impaired glucose tolerance are effective in producing long term weight loss and modest, but clinically meaningful, improvement in metabolic outcomes. A strength of the review is that the original RCTs included participants from the US (including ethnic minorities), UK, Europe, and Asia, and so the findings may be generalisable to diverse populations. The results support the clinical guidelines for the treatment of overweight and obesity published by the National Heart, Lung, and Blood Institute1 and World Health Organization.2 These 2 organisations recommend combined interventions of caloric restriction, increased physical activity, and behaviour therapy. Weight loss interventions were most often implemented by dietitians or exercise physiologists, a feature that must be addressed in the context of dissemination and translation to clinical practice. Implications of this review go beyond clinical translation to that of policy and suggest that resources (dietitians and exercise physiologists) and reimbursement issues should be addressed in an effort to make effective weight loss interventions available to all people needing such intervention.

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